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opposite the twenty-fifth if the seventh ring of one is opposite the thirty-third of the other.

(*To be continued.*)

PSYCHOLOGY.¹

Recent Work in Hypnotism.—With the June number the "Revue de l'Hypnotisme" completed its ninth volume and in turning over its pages I find several articles that are of more than merely technical interest.

Liébeault of Nancy contributes two articles on the psychology of normal sleep and its relations to hypnotic sleep and waking life. The essential characteristic of waking life is the activity of attention and will; in sleep both faculties become quiescent; in hypnosis we find an anomalous "polarisation" of attention, it being riveted on the idea of sleep on the one hand, whereby actual sleep is induced, and on the personality of the hypnotizer on the other. Will is quiescent, and thus the patient becomes amenable to suggestion. Violent passions, "fascination," aboulia, and all other states in which will power is weakened, are to be regarded as akin to sleep.

Prof. Matias-Duval outlines a histological theory of sleep suggested by the Golgi-Cajal doctrines. Admitting that the ultimate nervous elements are functionally related, not by actual physical continuity, but by mere contiguity, it is natural to suppose that the transmission of nervous activity would be facilitated by approximation of the terminal filaments. It is not improbable that they may be capable of amœba-like extension such as has been observed by Wiedersheim in the brain of *Leptodora hyalina*. It is possible that a paralysis of these terminal filaments may be brought about by the absence of oxygen and excess of carbonic acid; the transmission of nervous activity would thus be impeded and sleep supervene.

Dr. Raphael Dubois contributes a paper on the physiological conditions of hibernation in the marmot. He has been unable to find traces in the blood of the hibernating animals of toxalbumens, toxines or other somniferous agents, but has found an excess of carbonic acid which he ascribes in part to the depression of circulation, respiration

¹ This department is edited by Dr. Wm. Romaine Newbold, University of Pennsylvania.

and temperature, but chiefly to a dehydration of the blood. A portion of this water accumulates in fluid form in the stomach and caecum, and another portion in the peritoneum and other membranes in the form of lymph containing leucocytes. At the same time, owing to a diminution in the portal circulation, glycogen accumulates in the liver. Upon awaking, these fluids are reabsorbed, the leucocytes convert the glycogen into sugar and the temperature rises. All these phenomena are under the control of the center for thermic sensibility in the anterior portion of the aqueduct of Sylvius; and between this center and the polar plexus, which controls the portal circulation, there is direct anatomical relation. Acetone, which is known to have soporific powers, is also found in the blood of the hibernating marmot and doubtless contributes to the total effect. "The winter sleep of the marmot may therefore be described as a carbonico-acetonemic autonarcosis."

The doctrine of the subconscious fixed idea has never been as clearly and succinctly stated as by Pierre Janet in the June number of the *Revue*. He gives first a typical case of a conscious fixed idea. A woman, aged 33, of neurotic ancestry and hysterical antecedents, fell at sight violently in love with a physician called to attend her child, and for some years remained under the control of this fixed idea. Here we have (1) Marks of mental weakness, (2) An irrational passion attached to one idea, (3) Its natural consequences in words, acts, etc. Four other cases are then detailed, precisely analogous, save in the absence of the second factor, there being no conscious fixed idea. A hysterical woman, aged 21, has repeated attacks of vertigo and of groundless terror. Another sustained, at 29, three great shocks: her father lost his money, a near friend died of phthisis in her presence, and she saw a man crushed to death. For four years afterwards she fell into an apparently dreamless sleep upon the least shock. A girl aged 16 has nocturnal micturition, but affirms that she never dreams. A woman of neurotic family, a brother being hysterical, a sister insane, father and grandfather drunkards, has monthly attacks of mental and physical distress which end in an uncontrollable desire to drink. After a spree of several days' duration, she recovers consciousness and has no memory of the attack. While her normal self she is a total abstainer, and has a horror of the liquor which has ruined her family. In all these cases we have no conscious fixed idea. But when hypnotized, it apparently comes to light. Case (1) in hypnosis tells of a horrible dream she once had, in which she jumped from a bridge; this dream recurring produces the vertigo. When a child, she was frightened by a snake, and she claims that her terrors are due to seeing snakes about

her. Case (2) is told, while hypnotized, that when she falls asleep she is to dream aloud; her dreams are invariably repetitions of her friend's death-scene. Case (4) confesses to an insane desire to drink, of which her normal self is wholly unconscious, and Janet, upon tracing the history of the case, ascribes this to the fact that in her earlier convulsive attacks, the suggestion to drink was constantly given her by the presence of her drunken father. Case (3) hypnotized, has no memory of dreams which could cause her annoying trouble, but her hand, in automatic writing, tells of nightmares utterly unknown to her, during which micturition takes place. From these cases Janet draws the inference that in all a fixed idea exists subconsciously, producing in the upper consciousness effects analogous to those produced in the first case by a conscious fixed idea.

Prof. Pitres reports a case presenting analogous features. L. G., aged 37, became subject to hysterical convulsions in consequence of a runaway accident in which she and her child were thrown from a cart. The recurrence of this experience in the form of a dream or nightmare was the basis of her crisis. By hypnotic suggestion Prof. Pitres abolished its more terrifying features and diminished the violence of her attacks, but was unable to affect her sensory symptoms, pains, etc. While experimenting with another end in view, he made her dream that a certain surgeon performed an operation upon her; next day upon seeing the surgeon she had a, to her, inexplicable feeling of aversion for him, and, at the same time, felt a pain in the part upon which the imaginary operation had been performed. It would seem that the sight of the surgeon awakened into subconscious life the dream and its consequences. Acting on this hint, Prof. Pitres suggested dreams in which sundry doctors cured her pains, and so obtained results which he could not get by direct suggestion.

From the medico-legal point of view, the possibility of criminal suggestion is discussed by Prof. Delboeuf, of Leyden, and Dr. Liébeault, of Nancy. Prof. Delboeuf recants at length the affirmative view which he has expressed in his earlier works. Laboratory experiments are worthless; the patient is always more or less influenced by the suggestions of the environment as well as by the command of the hypnotizer, and is consequently fully aware that the whole performance is a mere comedy. We are all subject to criminal auto-suggestions in our dreams, and we know how little mischief actually results from them; the danger from hypnotic suggestions is no greater; it will never be as great as that of evil communications and corrupt example. Yet

Prof. Delboeuf admits that signatures to wills, etc., may be secured and attempts on chastity made easier by hypnotic suggestion.

Dr. Liébeault's articles in reply adduce no new arguments and wholly fail to meet the points raised by Delboeuf. He merely emphasizes the power of suggestion and the helplessness of the subject. The single case which he quotes as conclusive is of no value. Dr. X. and himself successfully suggested theft to a working man; some years later he was convicted of numerous petty thefts and imprisoned. After his release he told Dr. Liébeault, while hypnotized, that his second series of thefts had been committed in obedience to a second suggestion from Dr. X. The total lack of evidence for the man's previous honesty and of confirmation of his story, taken in conjunction with Liébeault's obvious predisposition to accept this view of the case, robs it of the interest it would otherwise have had.

Two cases of death in the hypnotic state are reported. One was a patient of Bernheim's; the autopsy showed that death was due to a pulmonary embolism with which the hypnosis could have had nothing to do. The other is the sensational case in Hungary of which a brief account appeared at the time in the American papers. Frl. Elsa Solomon, living in the neighborhood of Buda-Pesth, had suffered from hysterical attacks for several years, but had found considerable relief during the last 18 months of her life in hypnotic treatment at the hands of her physician. A man named Neukomm, described as a "specialist in well-digging," happened to be visiting at her father's house and hypnotized her for experimental purposes. She was found to be possessed of clairvoyant powers. On Sept. 17, 1894, Neukomm hypnotized her, much against her will, as she was feeling badly, and told her to visit in spirit his brother, ill at Werschetz, and describe his condition. This she professed to do. He then asked what would be the outcome of the illness. She replied, with difficulty, "Prepare for the worst," and immediately fell from her chair with a cry. Her heart was still beating, and an injection of ether was given, but she died in a few seconds. A medico-judicial commission appointed by the Government reported that her death was due to cerebral anaemia, and refused to inculcate Neukomm. As he continued experimenting, the Hungarian Government issued an edict restricting the practice of hypnotism to regular physicians, and requiring that the patient in every case sign an order, before witnesses, asking to be hypnotized. The hypnotization must also be in presence of witnesses.

Casimir de Krauz contributes six admirably impartial articles upon the experiments conducted by Dr. Ochorowicz and others with Eusapia

Palladino in Warsaw. He has given in concise form and a civilized tongue the gist of the discussion which raged about the case in the Polish magazines and newspapers. Lack of space prevents my giving any extended account of these remarkable experiments at present.

Dr. Quintard, of Angers, reports the case of a child of six who appears able to read his mother's thoughts. The case seems to deserve careful investigation.

As usual, the *Revue* abounds with accounts of remarkable cures wrought by suggestion, but the most interesting of the articles from the therapeutic point of view is one on "The Clinical Indications of Hypnotism," based upon Prof. Morselli's sixteen years' experience. Prof. Morselli belongs to the school of Braid, Richet, and Bernheim; he has found about one-fifth of his patients hypnotizable, neurasthenics, hysterics and maniacs being the most refractory. He has never observed clairvoyance, telepathy, cerebral polarization, etc., and holds a negative attitude with reference to their possibility. He does not believe that hypnosis has dangerous results; is not oversanguine as to its therapeutic value, but has had good results in functional neuroses and in dealing with symptoms of organic disorders. The effects of hypnotic treatment he has found neither constant nor durable, and thinks it must be supplemented by other agencies.

The Cebus and the Matches.—A *Cebus apella* in the Philadelphia Zoological Garden has become an expert in striking matches. He distinguishes the end with the fulminate, and I have not seen him make an error in this point. He seizes the match at the proper distance from the fulminate and so avoids breakage. He uses for friction the rough side of a kettle which is used for water, and spends no time on the glazed surface. As soon as the match is lit he throws it away, and I have not seen him burn himself. No man could handle the match more appropriately. He does not however always select a proper surface, as he tried on one occasion to strike a match on my finger, without success.—E. D. COPE.

Sand Swallows and Sawdust.—MR. C. O. THURSTON writes to the Naturalist, that during a visit at Groton, Conn, he observed sand swallows in great numbers building their nests in a large pile of sawdust instead of their usual resort, a sand bank.